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EGLINTON
RAPID
TRANSIT

STUDY DESIGN

A JOINT STUDY CONDUCTED BY

METROPOLITAN TORONTO PLANNING DEPARTMENT

METROPOLITAN TORONTO ROADS AND TRAFFIC DEPARTMENT

TORONTO TRANSIT COMMISSION

DECEMBER 1983

EGLINTON RAPID TRANSIT
STUDY DESIGN

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1. INTRODUCTION

1.1 TERMS OF REFERENCE

1. Introduction

This study design document sets out a description of the feasibility study, a schedule of the tasks to be undertaken, the limits of the study and a framework for the participation of staff of Metro Planning, Metro Roads and Traffic and Toronto Transit Commission.

1.1 Terms of Reference

The Council of the Municipality of Metropolitan Toronto adopted Joint Report No. 1 of the Transportation Committee and the Economic Development and Planning Committee on June 21, 1983, which set out the Terms of Reference for the Eglinton Rapid Transit Line Feasibility Study. These terms of reference as approved are as follows:

I Study Objectives:

The overall objectives of the study are as follows:

(1) to define right-of-way requirements and station locations for a rapid transit line along Eglinton Avenue from the Spadina Subway Station west to a terminal near the west Metro boundary;

(2) to select the rapid transit technology best suited for such a line;

I Study Objectives (Cont'd):

(3) to establish the priority of the construction of the various segments of the line;

(4) to develop an operational plan for the line including proposed revisions to existing bus services which could feed the line.

(5) to determine passenger usage and possible destinations;

(6) to determine capital and operating costs; and

(7) to recommend phased development which will support the intent and objectives of the Metropolitan Official Plan;

II Study Scope:

The study will be undertaken in such a manner as to satisfy the requirements of the Environmental Assessment Act (E.A.A.). A feasibility study of this type does not itself require approval under the Act. However, any decision by Metropolitan Council to proceed with implementation of a project will require <u>prior</u> E.A.A. approval which ideally should be sought along with any other required approvals (e.g. Official Plan amendment,

II Study Scope (Cont'd):

capital financing, expropriation) under the new provisions for Joint Tribunals. It will, therefore, be necessary for the feasibility studies to provide adequate documentation for E.A.A. approval, which basically consists of descriptions of:

- the rationale (need) for the project;
- alternatives to carrying out the project; and
- alternative methods of carrying out the project and for each of the alternatives;
- descriptions of the environment affected;
- the effects on the environment; and
- proposals to prevent or mitigate the effects on the environment.

In addition, consistent with the requirements of the E.A.A., the study will include a public information and consultation program.

A number of studies have previously been conducted for this proposed transit line and these will be valuable as background input to the present feasibility study. These include the Metropolitan Toronto Transportation Plan Review which addressed the question of an Eglinton Transit Line, two subsequent reports of the Metropolitan Planning Department which dealt with terms of reference

II Study Scope (Cont'd):

and analysis for the line, a joint Metro/York planning report which dealt with the revitalization of the Eglinton corridor and a report of the Technical Transportation Planning Committee which considered the functional design of a rapid transit line within the Eglinton Transportation Corridor.

III Sub-Studies:

In order to achieve the above objectives, and to provide the information described above for the E.A.A. approval, the following sub-studies will be conducted:

(1) Need and Alternatives:

This study will assess the need for the line in terms of the forecasts of future ridership which will be done with the Planning Department's travel demand model. The model will also be used to project ridership for alternative alignments. This study will also identify the relative priority of various segments of the line.

(2) System Integration:

This study will assess the integration of this line with the rest of the transportation system (both

III Sub-Studies (Cont'd):

transit and road facilities). Of particular importance will be its connection to the GO ALRT northern line, Toronto International Airport and local transit facilities in Mississauga. This study will also develop an operational plan for the line as described in Objective (4) above.

(3) Evaluation of the Functional Design Alternatives: This study would include review of the horizontal and vertical alignment options, the station locations and the yard facility options. Also included would be assessments of property requirements and costs, construction costs and construction staging considerations. The cost of making the entire transit system accessible to the disabled will also be assessed. Of particular concern in this study would be the problems identified with the provision of a transit line along the Borough of York section of Eglinton Avenue (between the Spadina Subway and Jane Street). Problems have also been identified with crossing the Highway 401/427/Eglinton Avenue interchange.

III Sub-Studies (Cont'd):

(4) Rapid Transit Technology:

This study would evaluate various technologies, including LRT (light rail transit: the UTDC streetcar), ICTS (the UTDC vehicles to be used for the Scarborough line), ALRT and a subway. The evaluation would be based on the system capacity, cost, ease of integration with the road and transit system and environmental and land use impacts.

(5) Land Use and Environmental Impacts:

This study would assess the property requirements of the line as well as its impacts on adjacent development and redevelopment. Also to be included would be descriptions of the environment affected, and analysis of such environmental impacts as noise, vibration and appearance. Proposals to prevent or mitigate negative impacts will be included.

(6) Financial:

This study will include an assessment of annual operating costs and revenues and the implications on transit fares. Also to be included are estimates of new assessment and the number of jobs related to the new development and redevelopment.

IV Organization and Duration:

Since, as described above, a great deal of work on an Eglinton West transit line has already been done by Metro and TTC staff, it is proposed that this study be done "in house" under the overall direction of the Technical Transportation Planning Committee. A project manager will be appointed from the Planning Department staff and task leaders assigned from Metro and TTC staff to head the various component studies. A Technical Coordinating Committee made up of the project manager and the heads of the various sub-studies would assume the coordination of the studies on an on-going basis. Representatives from the Boroughs of York and Etobicoke will be invited to participate on working committees for the various sub-studies. Consulting assistance will be required for specialized aspects of the study.

Recognizing that the Eglinton West Line could be an option to the western portion of the proposed line north of Highway 401, the study will be conducted during the same time period of the North Metro Rapid Transit Corridor Study and the West Metro boundary study allowing for the coordination of these studies. It is expected that the study will take about 12 months to complete.

V Cost:

It is estimated that the cost of the study will be about $200,000 for specialized consultants and staff assistance as required. The amount required for 1983 is estimated to be $100,000. These costs are eligible for a 75% Provincial subsidy from the Ministry of Transportation and Communications.

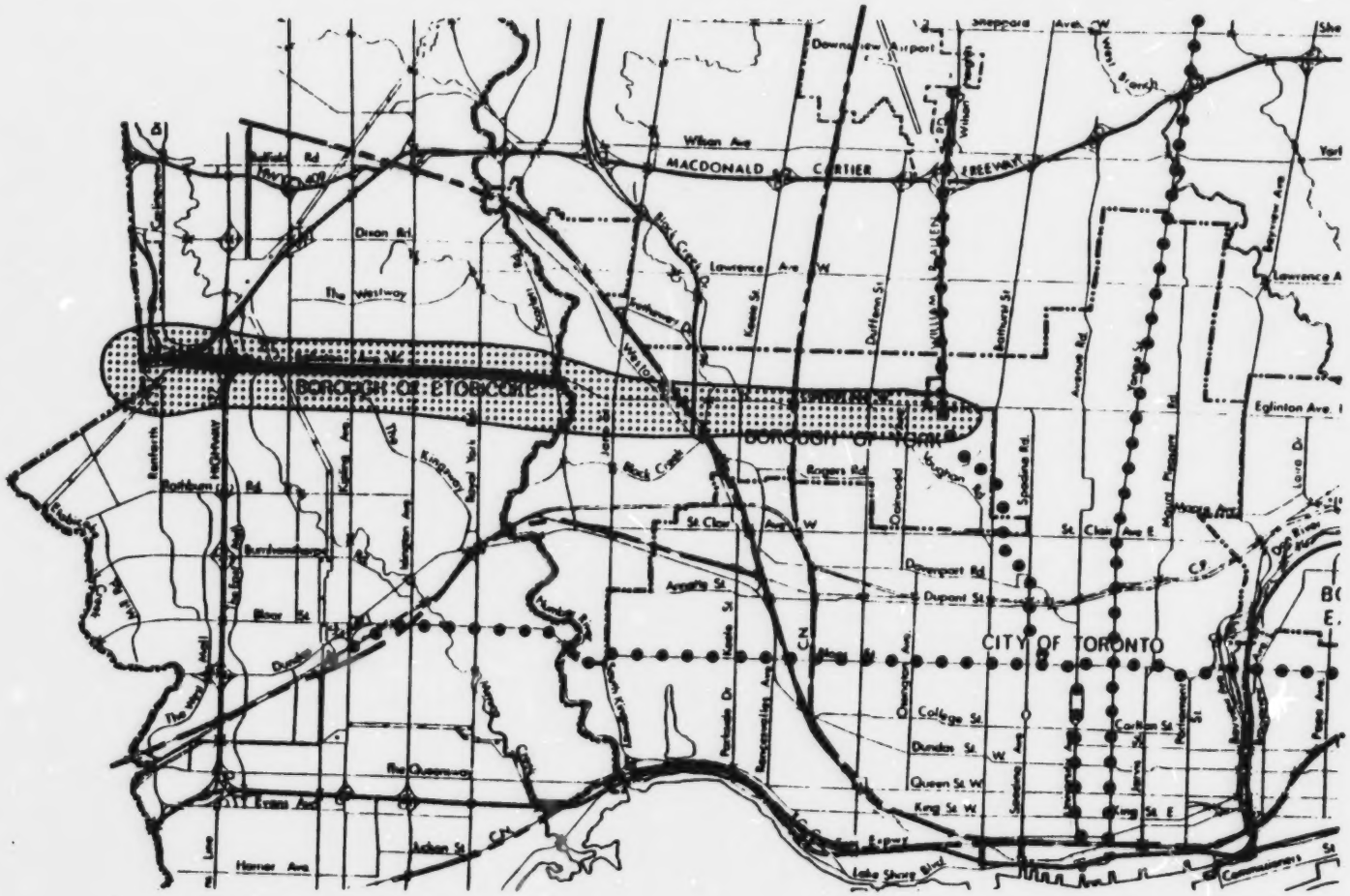
1.2 PROJECT LIMITS

1.2 Project Limits

A significant amount of work has been undertaken in the past to determine the impact of a rapid transit line along Eglinton Avenue. These efforts, conducted through a number of studies, investigated vertical and horizontal alignment alternatives, road traffic implications, land use development potential and other factors which must be considered in the inclusion of a rapid transit line along this corridor. Rather than duplicate these efforts, the Eglinton Rapid Transit project will review the background of the work undertaken by the previous studies and will build upon it the basic framework of the current program. Additional work will be conducted to investigate the impact of new conditions which have changed as a result of development, new travel patterns or the terms of reference particular to this study.

The reference studies and reports which will provide the background for the Eglinton Rapid Transit study are:

- the Terms of Reference for the North Metro Rapid Transit Corridor Study (1983);
- the Accelerated Rapid Transit Study completed by the Metropolitan Toronto Planning Department and the Toronto Transit Commission (May 1982);



LEGEND

- Study Area
- Eglinton Transportation Corridor
- Existing Rapid Transit Lines
- Existing Commuter Rail Lines

EGLINTON WEST RAPID TRANSIT LINE
STUDY AREA

FIGURE 1

1.2 Project Limits (Cont'd):

- the Terms of Reference and reports of the Mississauga Transportation Study;
- the official Plan for Metropolitan Toronto as approved September 1981;
- the Eglinton Transportation Corridor - Property Requirements Report by the Metropolitan Planning Department (February 1980);
- the Eglinton Corridor Study: Its Problems and Needs by the Planning Departments of Metropolitan Toronto and the City of York (October 1979);
- the Impact Study for the Eglinton Rapid Transit Line by the City of York Planning Department and the IBI Group (September 1977);
- two reports prepared by the Metropolitan Planning Department in 1976 regarding the Eglinton Transit Line: Terms of Reference, Alignment and Station Design Options; and, Background and Analysis; and
- the Eglinton Transit Development Corridor, Report 63.15 of the Metropolitan Toronto Transportation Plan Review (September 1974).

1.2 Project Limits (Cont'd):

A number of transportation issues and objectives related to the Eglinton Rapid Transit Line have been defined to establish the scope and limits of the study, including:

1. Impact on vehicular traffic, in particular relief in cross-boundary traffic between Mississauga and Metro;

2. Determination of demand levels and origin/destination flows;

3. Definition of the Eastern Terminal and alignment;

4. Access to City of York centres:

   - York City Centre
   - Eglinton/Weston
   - Eglinton/Dufferin;

5. Definition of the Western Terminal.

The options to be considered for the alignment and terminal station alternatives can be described as follows:

Western Terminal

The study is to consider alignments and station locations within the Metropolitan boundaries. However, several factors will be taken into consideration in the analysis, which might affect the conclusions regarding the western section of the line. These factors include:

- a transportation terminal in the Hwy. 401/Hwy. 427/ Renforth Drive area in which GO ALRT, Eglinton Rapid Transit, TTC surface transit, Mississauga Transit and other surface vehicles would interface.

1.2 Project Limits (Cont'd):

- the need for a connection or extension of the service to Toronto International Airport.

- the interaction or integration with the northern GO ALRT line presently under study.

- the possible extension of the service to the Mississauga City Centre (Square One).

Eastern Terminal

The demand and origin/destination analysis would determine the alignment of the eastern portion of the line under consideration. The terms of reference require the analysis of a line connecting with the Spadina Subway.

However, should the demand analysis indicate that the predominant usage of the line would be cross-boundary travel to the Central District, the possibility of connecting the Eglinton Rapid Transit Line with the Downtown Rapid Transit Line would be considered.

A connection to the Spadina Subway at Eglinton West Station will consider alignments on Eglinton Ave. (which will include analysis of an underground or an elevated system) and along the abandoned railway right-of-way north of Eglinton Ave. between Allen Rd. and Caledonia Rd. (This alignment would consider an elevated or an at-grade system.)

1.2 Project Limits (Cont'd):

Yard

Alternative sites for maintenance yards associated with the Eglinton Rapid Transit Line will be evaluated.

2. WORK PROGRAM

2.1 TASK DESCRIPTION

Task 301

Employment Growth Forecast

Purpose:

1. Determine present (1983) employment levels on Eglinton Corridor, (major nodes of Keele/Eglinton, Dufferin/Eglinton, Weston/Eglinton).

2. Forecast employment levels for above-mentioned nodes for the years 1991 and 2001, on the basis of growth in office/industrial space.

3. Determine present and future population forecasts to estimate travel demand patterns affecting the Eglinton Rapid Transit line.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 302

- NUMBER NOT USED.

Task 303

Demand Modelling

Purpose:

1. Forecast travel demand based on employment growth for Eglinton Corridor, Central Area and cross-boundary travel from Mississauga.

2. Obtain Eglinton Corridor Option demand estimates for the alignment configurations to be studied.

3. Forecast the impact of an Eglinton Rapid Transit line on ridership on the Bloor Subway and the proposed Downtown Rapid Transit line.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 304

Review of Previous Studies and Reports

Purpose:

1. Outline/summarize studies and reports dealing with Eglinton Rapid Transit Line.

2. Define additional work required to be undertaken to complement previous analyses.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 305

Land Use Impact

Purpose:

1. To determine the impact of a rapid transit line on current and forecast land use along the Eglinton Corridor, in particular between Keele St. and Spadina Subway.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 306

Ridership and Modal Split Trends

Purpose:

1. Review cordon count and other traffic/transit data to determine discernible modal split shifts resulting from the introduction/extension of new rapid transit facilities along the Eglinton Ave. corridor.

2. Review overall and peak-point ridership trends on Spadina Line, and determine their relationship to the proposed Eglinton Rapid Transit Line.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 307

T.T.C. Capacity Constraints

Purpose:

1. Evaluate impact on Spadina Line, change in level of service with and without an extension of the Downtown Rapid Transit line to Bloor.

2. Forecast and identify the elements of the transit system where capacity deficiencies occur.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 308

Proposed GO ALRT

Purpose:

1. Identify the interaction or integration between GO ALRT (North Toronto Rapid Transit) and Eglinton Rapid Transit Line.

2. Determine impact caused by GO ALRT riders transferring to the Eglinton Rapid Transit line.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 309

West End Station Options

Purpose:

1. Identify potential locations of West End Terminal in the 401/427/Renforth Dr. area.

2. Evaluate extension to Toronto International Airport.

3. Evaluate extension to Mississauga City Centre.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 310

T.T.C./GO Transit Joint Operation

Purpose:

1. Identify potential of a combined Transportation Terminal at 401/427/Renforth Drive.

2. Determine possible interaction/integration with North Toronto Rapid Transit Line.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 311

Technology Selection

Purpose:

1. To evaluate alternative transit technologies and recommend a technology choice for implementation on the Eglinton Rapid Transit Study.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 312

System Standards

Purpose:

1. To prepare technical guidelines and parameters setting out the technology constraints and system performance criteria for the Eglinton Rapid Transit Study.

Deliverable:

Technical memorandum and drawings

Duration of Activity:

Per schedule

Task 313

Vertical and Horizontal Alignment

Purpose:

1. To develop alignment alternatives for the Eglinton Rapid Transit Study. These are to be divided into three distinct sub-studies (scale of plans 1:2000).

   - West Metro Boundary to Weston Rd.
   - Weston Rd. to Caledonia Rd.
   - Caledonia Rd. to Spadina Subway

2. To develop alignment alternatives for a connection between the Eglinton Rapid Transit Line and the Downtown Rapid Transit Line (scale of plans 1:2000).

3. To develop alignment alternatives for an extension of the Eglinton Rapid Transit line to Toronto International Airport (scale of plans 1:5000).

4. To develop alignment alternatives for extension of the Eglinton Rapid Transit line to Mississauga Centre (scale of plans 1:5000).

5. To review station locations and develop site plans (scale of plans 1:500).

Vertical and Horizontal Alignment (Cont'd)

Purpose (cont'd):

6. To review yard facility locations and develop site plans (scale of plans 1:500).

Deliverable:

Technical memorandum and drawings

Duration of Activity:

Per schedule

Task 314

Property Requirements

Purpose:

1. To identify property requirements for alternative alignments.

2. To recommend property acquisition strategies.

Deliverable:

Technical memorandum and drawings

Duration of Activity:

Per schedule

Task 315

Environmental Assessment Studies

Purpose:

1. To prepare General Background report as required under the Environmental Assessment Act.

2. To prepare a Project Description and Environmental Impact Evaluation report as required under the Environmental Assessment Act. This report is to include the rationale for the project; alternatives for carrying out the project; alternative methods; environmental effects; and proposals to mitigate the effects on the environment.

3. To assemble appendix data and information as required under the Environmental Assessment Act.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 316

Operational Analysis

Purpose:

1. To develop an operational plan for the line including proposed revisions to existing bus service which could feed the line.

2. To analyze the impact on Eglinton West Station.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 317

Vehicular Traffic Analysis

Purpose:

1. To analyze the impact of an Eglinton Rapid Transit Line on future road design, traffic operations and traffic volumes.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 318

Implementation Schedule and Capital Cost Estimates

Purpose:

1. To prepare a realistic implementation schedule for the Eglinton Rapid Transit Project and the proposed phasing of construction.

2. To prepare the capital cost estimate for implementation of the Eglinton Rapid Transit Project.

3. To prepare a cash flow analysis which examines the implementation impact on Provincial subsidies and Metropolitan Toronto budgets.

4. To prepare an estimate of the man years of employment that results from the construction expenditures.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 319

Operating Costs

Purpose:

1. To prepare an operating cost estimate for the Eglinton Rapid Transit Line, including adjustments in the operation of other transit services.

2. To prepare an analysis of the impact of the Eglinton Rapid Transit Line operating costs on the Provincial operating subsidy and TTC fare costs.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 320

Property Tax Revenues

Purpose:

1. To prepare an estimate of the additional assessment generated by new development and redevelopment to be serviced by the proposed new transit facilities.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 321

Alternatives Evaluation

Purpose:

1. To evaluate alternative proposals in terms of:

   - relief of traffic congestion in the Eglinton Corridor
   - accessibility
   - ridership
   - environmental impact
   - construction difficulties
   - property acquisition
   - development impact
   - operational integration and impact
   - capital cost
   - operating cost and fare structure impact
   - construction employment
   - cross boundary traffic impact

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 322

Metropolitan Toronto Official Plan Review

Purpose:

1. To evaluate the measures taken by Metro to foster the objectives of the Metropolitan Toronto Official Plan.

2. To evaluate the success of these Metro initiatives towards decentralization policies.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 323

Accessibilitiy for the Handicapped Studies

Purpose:

1. To identify provisions made for handicapped patrons in the design of the base case system.

2. To estimate the total number of handicapped citizens in Metro Toronto and the percentage of these handicapped persons for whom accessibility is provided in the base case system.

3. To prepare design solutions to provide for total accessibility for all handicapped persons including Wheel Trans patrons.

4. To evaluate the total accessibility provisions in terms of added capital and operating cost; level of service to handicapped and non-handicapped patrons and additional patronage as a result of the full accessibility provisions.

5. To review the history of the TTC in providing services for handicapped patrons on both regular transit and dedicated transit facilities.

Deliverable:

Technical memorandum

Duration of Activity:

Per schedule

Task 324

Public Consultation

Purpose:

1. To provide public notification of the intent to proceed with the feasibility study.

2. To provide public notification of the availability of the study design terms of reference indicating where copies may be seen. Copies will be provided to interested parties on request.

3. To provide public notification of the availability of study reports indicating where copies may be seen. Copies will be provided to interested parties on request.

4. To provide for a limited number of public meetings through which public concern can be voiced and additional project information can be made available.

5. To provide limited number of meetings with Area Municipalities.

Deliverable:

Documentation of public/municipal comments

Duration of Activity:

Per schedule

Task 325

Report Preparation

Purpose:

1. To produce the following reports:

Report 4.01 Eglinton Rapid Transit Project
Problems and Issues to 2001
Summary report for Tasks 301 to 307

Report 4.02 Eglinton Rapid Transit Project
Co-ordination with GO ALRT
Summary report for Tasks 308 to 310

Report 4.03 Eglinton Rapid Transit Project
Functional Design
Summary report for Tasks 311 to 313

Report 4.04 Eglinton Rapid Transit Project
Property Requirements
Summary report for Task 314

Report 4.05 Eglinton Rapid Transit Project
Environmental Assessment
Summary report for Task 315

Report 4.06 Eglinton Rapid Transit Project
Evaluation of Alternatives
Summary report for Tasks 316 to 324

Report Preparation

Purpose: (cont'd)

Report 4.07 Eglinton Rapid Transit Project

Summary Report

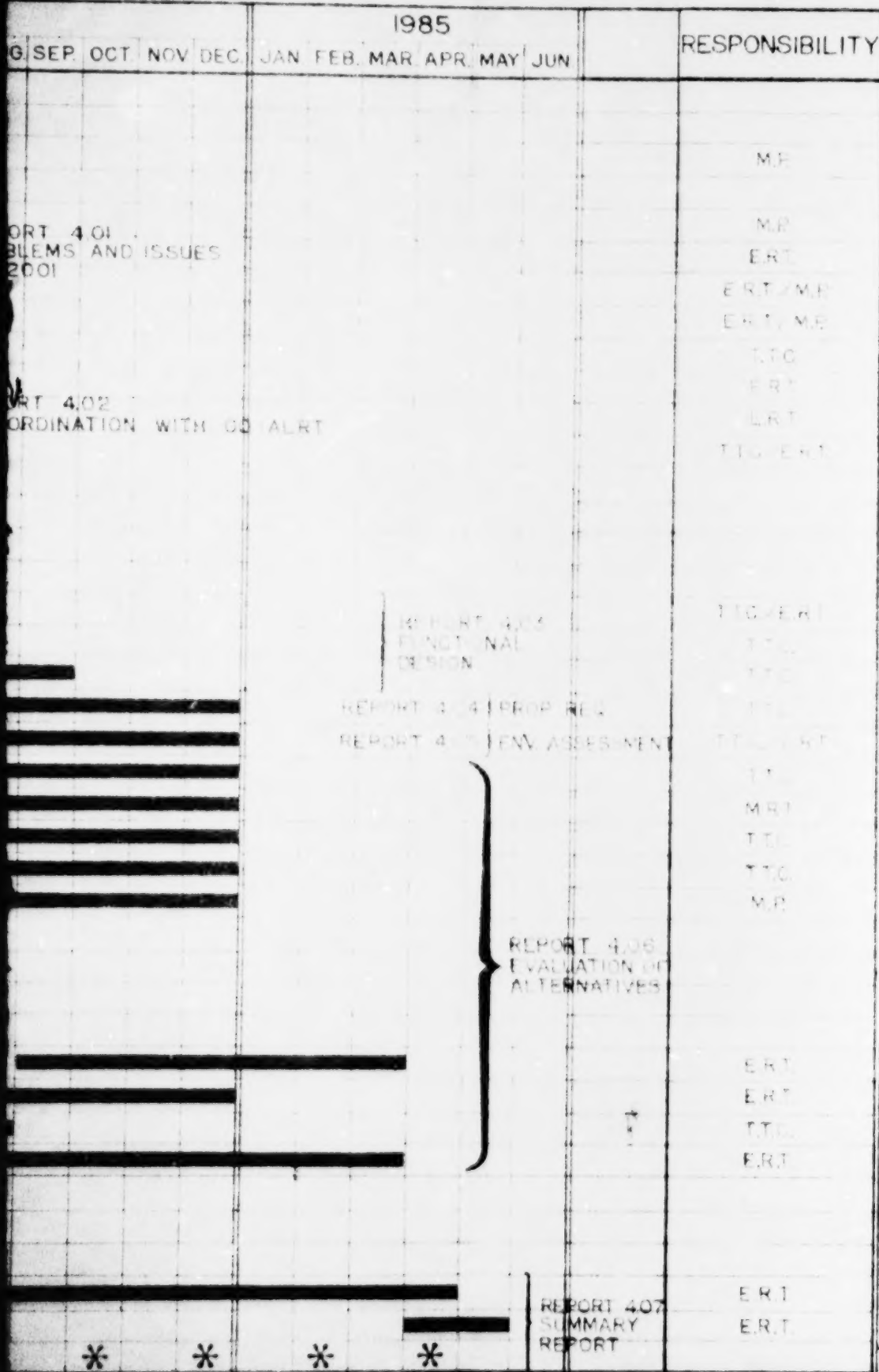
Summary of reports 4.01 to 4.06

Task 326

Report Printing and Distribution

2.2 PROJECT SCHEDULE

TASK #	TASK DESCRIPTION	RESPONSIBILITY
	PROBLEM DEFINITION	
301	EMPLOYMENT / POPULATION FORECASTS	M.P.
302	(NOT USED)	
303	DEMAND MODELLING	M.P.
304	REVIEW OF PREVIOUS STUDIES & REPORTS	E.R.T.
305	LAND USE IMPACT	E.R.T./M.P.
306	RIDERSHIP & MODAL SPLIT TRENDS	E.R.T./M.P.
307	T.T.C. CAPACITY CONSTRAINTS	T.T.C.
308	PROPOSED GO - A.L.R.T.	E.R.T.
309	WEST END STATION OPTIONS	E.R.T.
310	T.T.C. / GO TRANSIT JOINT OPERATIONS	T.T.C./E.R.T.
	SOLUTION DEVELOPMENT	
311	TECHNOLOGY SELECTION	T.T.C./E.R.T.
312	SYSTEM STANDARDS	T.T.C.
313	VERTICAL & HORIZONTAL ALIGNMENT	T.T.C.
314	PROPERTY REQUIREMENTS	T.T.C.
315	ENVIRONMENTAL ASSESSMENT STUDIES	T.T.C./E.R.T.
316	OPERATIONAL ANALYSIS	T.T.C.
317	VEHICULAR TRAFFIC ANALYSIS	M.R.T.
318	SCHEDULING & COST ESTIMATES	T.T.C.
319	OPERATING COSTS	T.T.C.
320	PROPERTY TAX REVENUES	M.P.
	EVALUATION	
321	ALTERNATIVES EVALUATION	E.R.T.
322	OFFICIAL PLAN REVIEW	E.R.T.
323	ACCESSIBILITY FOR HANDICAPPED	T.T.C.
324	PUBLIC CONSULTATION	E.R.T.
	REPORTING	
325	REPORT PREPARATION	E.R.T.
326	PRINTING	E.R.T.
	PLANNING REVIEW COMMITTEE MEETINGS	



SCHEDULE OF
WORK TASKS

EGLINTON RAPID
TRANSIT STUDY (E.R.T.)

METROPOLITAN TORONTO
PLANNING DEPARTMENT (M.P.)

METROPOLITAN TORONTO
ROADS AND TRAFFIC DEPT. (M.R.T.)

TORONTO TRANSIT COMMISSION (T.T.C.)

FIGURE 2

DATE:
DEC. 1983